

Notice of Allowability

Application No.

10/657,723

Examiner

Kanji Patel

Applicant(s)

JOHNSON ET AL.

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/14/07 and 6/29/07.
2. ☒ The allowed claim(s) is/are 1-3, 5-24, 26-40 (renumbered as 1-38, respectively).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 2/23/04, 11/14/05
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of **Group I** (claims 1-40 and 125-126) in the reply filed on 6/29/07 is acknowledged.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Micheal D. Lake on 8/14/07.

The application has been amended as follows:

In the claims:

Replace claims 1 and 22 with the following presently amended version:

Claim 1 (Currently Amended). An apparatus providing an image output signal in response to an image input signal, the device comprising:

a saturation bias identification circuit having a range of useful grey-levels output responsive to the image input signal; and

a cumulative distribution function scaling circuit having a scaled output responsive to the useful grey-levels output,

wherein the range of useful grey-levels output includes all grey-levels within a cumulative distribution function except the first unsaturated grey-level

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within the cumulative distribution function and the last unsaturated grey-level within the cumulative distribution function.

Claim 22 (Currently Amended). A method of providing an image output signal in response to an image input signal comprising the steps of:

generating a range of useful grey-levels in response to the image input signal; and

generating a scaled output in response to the range of useful grey-levels, wherein the step of generating a range of useful grey-levels includes specifying all grey-levels within a cumulative distribution function except the first unsaturated grey-level within the cumulative distribution function and the last unsaturated grey-level within the cumulative distribution function.

Cancel claims 4, 25, 41-129

Information Disclosure Statement

3. Information Disclosure Statement submitted on 2/23/04 and 11/14/05 have been considered by the examiner.

Drawings

4. Drawings filed 9/8/03 have been approved by the examiner.

Allowable Subject Matter

5. The following is an examiner's statement of reasons for allowance:

Claims 1-3, 5-24 and 26-40 (renumbered as 1-38, respectively) are allowed.

None of the prior art teaches or suggests that the range of useful grey-levels output includes all grey-levels within a cumulative distribution function except the first unsaturated grey-level within the cumulative distribution function and the last unsaturated grey-level within the cumulative distribution function as required by claims 1 and 22. The closest prior art to Park (US 6,259,472 B1) disclose a histogram equalization apparatus for contrast enhancement of a moving image includes a cumulative distribution function calculator for counting the number of pixels having a gray level from the minimum to the maximum or less with respect to an input image in a frame unit to calculate a cumulative distribution function value of each gray level, and a look-up table for updating histogram-equalized level corresponding to each gray level of the input moving image in a frame unit based on the cumulative distribution function value of each gray level, and outputting a corresponding histogram-equalized level according to a level of the input moving image. Therefore, the histogram equalization apparatus can perform real-time histogram equalization on a moving image with a simple hardware, without using a frame memory, a probability density function calculator and dividers for a cumulative density function calculation. However, **Park fails to anticipate or render the about features obvious.**

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Other prior art cited

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mayo, Jr. (US 4,697,594) discloses a displaying a single parameter image.

Murayama et al. (US 5,978,506) disclose colorant-independent color balancing methods and systems.

Caldato et al. (US 6,665,435 B1) disclose an image data processing method and corresponding device.

Hattori et al. (US 6,760,086 B2) disclose an attachment film for electronic display device.

Kawabata et al. (US 6,373,533 B1) disclose an image quality correction circuit for video signals.

Kuo et al. (US 5,982,926) disclose a real-time image enhancement techniques.

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Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kanji Patel whose telephone number is (571) 272-7454. The examiner can normally be reached on Monday to Thursday from 8 a.m. to 6:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lillis Eileen can be reached on (571) 272-6928 The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kanji Patel
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8/16/07


KANJIBHAI PATEL
PRIMARY EXAMINER